

What is claimed is:

1. A differential assembly having a limited slip differential capability, said differential comprising:

5 a differential casing;

a pair of side gears oppositely situated in and rotatably supported by said differential casing;

a pinion shaft arranged at right angle to the axis of the side gears and fixed to the differential casing at both ends thereof;

10 a plurality of pinions rotatably mounted on the pinion shaft and adapted to mesh with the side gears; and

a fluid coupling disposed between one of said side gears and said differential casing, wherein said fluid coupling comprising:

15 a first impeller provided with a first set of vanes and operably connected to one of said side gears;

a second impeller provided with a second set of vanes and operably connected to said differential casing so that said first set of vanes is facing said second set of vanes; and

20 a viscous fluid disposed between said first set of vanes and said second set of vanes.

2. The differential assembly according to claim 1, wherein said first impeller and said second impeller are held together with at least one snap ring.

3. The differential assembly according to claim 2, wherein said at least one snap ring engages a corresponding grooves formed within said first and said second impellers.

4. The differential assembly according to claim 1, wherein said first impeller is
5 drivingly coupled to said one of said side gears.

5. The differential assembly according to claim 1, wherein said second impeller is drivingly coupled to said differential casing.

10 6. The differential assembly according to claim 1, wherein vanes of said first and second sets of vanes have substantially C-shaped configuration.

7. The differential assembly according to claim 1, wherein vanes of said first and second sets of vanes have semi-circular configuration

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8. The differential assembly according to claim 1, wherein said fluid coupling includes at least one seal disposed between said first impeller and said second impeller to contain said viscous fluid within said fluid coupling.

20 9. The differential assembly according to claim 8, wherein said at least one seal is disposed in a corresponding cavity between said first and said second impellers, said cavity defined by opposite complimentary grooves formed in said first and said second impellers.